

April 2, 2003

**Notification and Assessment of Emergency Situation in accordance with the Interim
Procedures and Criteria for Determining Emergency Situations adopted in 1980
under the London Convention 1972**

The United States Environmental Protection Agency (US EPA) is planning to grant an application from the Florida Department of Environmental Protection (FDEP) for an emergency permit to dump a large volume of treated wastewater from an abandoned phosphate fertilizer manufacturing facility into the Gulf of Mexico. As explained in Section 3.2.1.4, no adverse impact on the marine environment is expected from disposal of this treated wastewater.

This permit is being sought to prevent a large-scale spill of untreated acidic wastewater from the facility onto the site, across two nearby roads, and into Tampa Bay, an inland bay on the Gulf of Mexico. Despite aggressive actions over the past two years to increase holding capacity and increase treatment and removal of the wastewater so that the wastewater holding ponds could be closed, the threat of a catastrophic spill became imminent in January 2003 due to much higher than expected rains beginning in September of 2002, and culminating with a record 16.5 inches of rainfall in December, 2002, and to the lack of alternative means immediately available of using or disposing of the wastewater. The current extremely elevated levels of wastewater in the holding ponds, and the wet weather predicted for this spring followed by Florida's summer rainy season and hurricane season, are creating an unacceptable risk of a spill from either overtopping of the ponds or structural failure of the pond walls. Such a spill, which could release hundreds of millions of gallons of untreated acidic wastewater, would pose an unacceptable risk to maintenance and inspection personnel at the facility, as well as to any persons or traffic on the two nearby roads (one of which is a hurricane evacuation route). Such a catastrophic release would also be devastating to the environment of Tampa Bay, and potentially the near-shore Gulf of Mexico.

FDEP has actively pursued and will continue to actively pursue all other potential options for dealing with this emergency. All currently available options, such as treatment and release to inland waters and transfer to other facilities for re-use or disposal, will continue to be used to the maximum extent feasible. Because there are no immediately feasible alternatives capable of treating and disposing the necessary volumes, a large volume of the treated wastewater currently is being discharged to a nearby harbor on Tampa Bay under an emergency order from FDEP in order to avert a catastrophic spill. Signs of impact to this harbor, which is an aquatic preserve and Outstanding Florida Water, are already occurring—a bloom of mahogany tide (*Prorocentrum*) was reported in February. If the volume of this discharge is not reduced, impacts to this harbor, and most likely to Tampa Bay, are expected to become more severe. The primary risks from this discharge are associated with its nitrogen load, and include increased phytoplankton concentrations and associated declines in water clarity, seagrass loss due to decreased light availability, and dinoflagellate and other algae blooms including harmful algal bloom species. The unanimous consensus of a panel of scientists in the Gulf of Mexico region was that dispersing the treated wastewater further out in the Gulf of Mexico posed fewer ecological and health risks than continuing the discharge into Tampa Bay.

April 2, 2003

Despite FDEP's diligent and prolonged search for other solutions, there appears to be no immediately feasible option or series of options capable of consuming all of the wastewater that needs to be disposed of in order to remove the emergency condition and avert an accidental spill over the next 8 months (i.e., through this year's hurricane season). Therefore, FDEP is requesting an emergency permit to dump up to 535 million gallons of treated wastewater in the U.S. Exclusive Economic Zone in the Gulf of Mexico (referred to in the remainder of this document as "ocean disposal or disposal"). US EPA is evaluating FDEP's application and is currently considering alternative permit provisions to account for any disposal alternatives that might become available. For example, the volume of wastewater allowed to be disposed at sea could be reduced by the amount that can be disposed of through the continued use and development of alternative treatment and disposal methods. FDEP has identified alternative disposal options for approximately 165 million gallons of this treated wastewater. The ocean disposal permit would be re-evaluated at set intervals to adjust the volume to be ocean disposed based on the availability of any new disposal or re-use alternatives.

US EPA is considering permitting the Florida Department of Environmental Protection to utilize barges that would gradually release the treated wastewater in the specified disposal site in the northeastern Gulf of Mexico no closer than 40 nautical miles (74 kilometers) offshore. Releases would be spread out over 8 months and monitoring would be required. The use of barges with proper dispersion pumping techniques and equipment would result in nearly instantaneous dilution of the wastewater to the point where it would meet all applicable marine water quality criteria beyond the immediate zone of release. The wastewater is free of pathogens and no marine mortality is expected. It is anticipated that the nitrogen loading to the Gulf of Mexico from this discharge would be less than 1.5 tons per day, with a total nitrogen loading less than 300 tons. By way of comparison, the average loading of nitrogen into the Gulf by the Mississippi River is approximately 4,300 metric tons per day, and the loading of nitrogen to the Gulf watershed from air deposition is approximately 10% of that, or 430 metric tons per day.

While the wastewater proposed for disposal would be treated prior to disposal in order to minimize any potential environmental impacts, it still meets the definition of industrial waste in Annex I of the London Convention (waste materials generated by manufacturing or processing operations), and thus may only be disposed in emergencies, posing unacceptable risk relating to human health and admitting no other feasible solution. US EPA is planning to issue this permit based on a determination that this emergency situation poses an unacceptable risk relating to human health, in particular to the workers at the facility and to persons traveling on the two nearby roadways, and admits of no other feasible solution. In order to avert the imminent threat of a catastrophic spill due to a large rainfall event, US EPA is planning to issue the emergency permit for the ocean disposal as soon as April 7, 2003. We note that preliminary testing indicates that the treated wastewater does not contain any of the other wastes or matter listed in Annex I of the London Convention.

Under article V(2) of the London Convention, a Contracting Party may issue a special permit for the disposal of wastes or other matter listed in Annex I in emergencies posing an unacceptable risk relating to human health and admitting no other feasible solution. Before doing so, the Contracting Party is obliged to consult any other country

April 2, 2003

or countries that are likely to be affected and the IMO which, after consulting other Contracting Parties and international organizations as appropriate, shall, in accordance with article XIV, promptly recommend to the Contracting Party the most appropriate measures to adopt.

In 1976, the Parties to the London Convention adopted guidance on the procedures and criteria for determining emergency situations under the Convention (amended in 1980 to allow for coordination with emergency procedures under regional agreements; see “Interim procedures and criteria for determining emergency situations,” LDC V/12, annex 5). This guidance includes factors to be considered by a Party in assessing the risk to human health (section 3.1.1) and in evaluating alternative methods of disposal (section 3.1.2) when determining whether an emergency does exist. This guidance also includes a list of information that should be provided to other countries which may be affected by the disposal (section 3.2) and to the IMO (section 3.3) once it has been determined that an unacceptable risk to human health exists and that ocean disposal is the only feasible solution. We do not believe any other countries will be affected by this disposal. Nevertheless, we acknowledge Mexico’s shared concern over issues affecting the Gulf of Mexico and as a courtesy we will consult with Mexico regarding this situation.

This document summarizes (1) US EPA’s assessment of the factors considered in connection with the request from FL DEP for an emergency permit and (2) the information to be provided to IMO, and to Mexico as a courtesy, prior to issuing any permit, following the pertinent sections of the LC guidance discussed above.

3.1 ASSESSMENT OF THE EMERGENCY SITUATION

3.1.1 Assessment of risk to human health

3.1.1.1 *The circumstances of the emergency:*

In February 2001, Piney Point Phosphates, Inc., (PPPI) filed a petition for protection from creditors in U.S. Bankruptcy Court and abandoned its Piney Point phosphate fertilizer manufacturing complex. At the time of filing, PPPI notified the Florida Department of Environmental Protection (FDEP) that PPPI was financially incapable of maintaining the Piney Point gypsum stack system to prevent a release of the 600 million gallons of untreated, acidic process wastewater onsite at that time. Since June 2001, FDEP and a Court-appointed Receiver have been aggressively developing innovative technologies to treat and re-use the water from the facility. However, the bankruptcy and discontinuation of plant operations has resulted in a net gain of water in the facility with each significant rainfall event, and FDEP has been unable to keep up with the volume of wastewater accumulating at the site. The inability to treat and dispose of sufficient quantities of wastewater due to a lack of alternatives creates an emergency situation of a continuous threat of a catastrophic spill of untreated acidic wastewater from either overtopping or structural failure of one or more of the water impoundments. This emergency situation was exacerbated by higher than anticipated rainfall this past Fall, including a record 16.5 inches of rainfall in December, and will continue through November of this year due to the rainfall expected this spring as well as hurricane

April 2, 2003

conditions which are prevalent in the Gulf of Mexico from June 1 to December 1 each year. This permit is being sought to prevent a large-scale spill of this untreated wastewater onto the site, thereby endangering the lives of 15 to 25 personnel at the facility who operate wastewater treatment systems and who maintain and provide emergency repair of the dike system. In addition, a failure of the dike system could release greater than 100 million gallons of untreated, acidic wastewater, flooding a major hurricane evacuation highway and emptying into Tampa Bay, an inland bay of the Gulf of Mexico.

3.1.1.1.1 type including chemical composition of material involved:

The untreated wastewater (which would not be ocean disposed) consists of process wastewater and rainfall-runoff from the former Piney Point Phosphates, Inc., phosphate fertilizer manufacturing complex. This untreated wastewater is highly acidic (pH 2.5 to 3.0, phosphoric acid based), high in nutrients (NH₃-nitrogen, sulfate, phosphate), and contains elevated levels of toxic metals.

It should be noted that this wastewater would be treated using a lime precipitation, aeration, and sedimentation process before being disposed in the ocean. This treated wastewater will have a pH of 6.0 to 8.5, total dissolved solids of about 7,000 mg/L, turbidity less than 7 nephelometric turbidity units, NH₃-N of 10 to 150 mg/L, and a density of approximately 1,005 kg/cubic meter. Organic and inorganic contaminants are expected to be below detection limits or within Federal Water Quality Criteria (WQC), with the exception of NH₃-N, which is expected to meet WQC within the allowable mixing zone.

3.1.1.1.2 location and cause of release:

There has not yet been an accidental spill of untreated wastewater from the former Piney Point facility since it declared bankruptcy. FDEP has identified the most likely events leading to a release as: 1) a dike breach resulting from wind surge and wave-induced overtopping, with subsequent rapid erosion and failure of the dike wall; 2) a dike breach due to collapse resulting from piping of the foundation spills; 3) a dike breach due to a stability failure triggered by concentrated seepage or overtopping surface water flow; and 4) piping failure resulting from concentrated seepage following existing cracks within gypsum and along the interface between the gypsum and foundation soils.

3.1.1.1.3 amount lost into the environment:

There has not yet been an accidental spill of untreated wastewater from the former Piney Point facility since it declared bankruptcy. A sudden dike failure could result in a major spill (i.e., an uncontrolled discharge) of millions of gallons of acidic wastewater (see 3.1.1.1.4 below).

3.1.1.1.4 potential for further release and expected rate:

A sudden dike failure could result in a major spill (i.e., an uncontrolled discharge) of millions of gallons of acidic wastewater through the plant site, onto nearby roads, and into Tampa Bay. One of the wastewater ponds is located only about 400 feet east of the right-of-way of U.S. Highway 41 (a major hurricane evacuation route) and less than 100 feet north of Buckeye Road. A 5-foot deep dike breach along Buckeye Road could result

in a peak uncontrolled discharge rate in excess of 1 million gallons per minute. At this rate, high-velocity flow at water depths greater than 3 feet could occur without warning across Buckeye Road. The untreated wastewater would be conveyed westward and, in less than one minute, could overtop U.S. Highway 41 at a water depth greater than one foot at a water velocity of approximately 10 feet per second.

3.1.1.2 The risks relating to human health with regard to:

The possibility of dike failure and/or overspilling of the dikes presents an immediate and unacceptable threat to human health and safety in terms of loss of life or injury to those in the path of flood waters. This risk is to those 15-25 workers operating the wastewater treatment system who are in danger of drowning or injury due to acute exposure to wastewater should a dike failure occur in a location that would send millions of gallons of acidic waters through the plant site. Also, risks are high for those personnel responsible for remedial actions to repair dikes during failures, particularly during storm conditions.

Risk to human safety is not limited to the on-site personnel at the facility since the South Cooling Pond is located only about 400 feet east of the right-of-way of U.S. Highway 41 (a major hurricane evacuation route) and less than 100 feet north of Buckeye Road. A 5-foot deep dike breach along Buckeye Road could result in a peak uncontrolled discharge rate in excess of 1 million gallons per minute. At this rate, high-velocity flow at water depths greater than 3 feet could occur without warning across Buckeye Road. The flow surge would be conveyed westward and, in less than one minute, could overtop U.S. Highway 41 at a water depth greater than one foot at a water velocity of approximately 10 feet per second. This situation would pose a threat to persons in the vicinity and to vehicular traffic present on the roads. In addition, the populations of a number of communities south of Piney Point, including the cities of Palmetto and Bradenton, plus several smaller towns and unincorporated areas, would have to be diverted west to I-75 and other smaller highways or possibly be stranded due to flooding in the event that U.S. Highway 41 were closed or flooded during a hurricane evacuation due to dike failure. Conservative estimates based on 1990 U.S. census data suggest that up to 300,000 people may be required to find alternate evacuation routes in such an event.

Furthermore, in the event of a catastrophic release to Bishop's Harbor/Tampa Bay, conditions may be created that are conducive to the stimulation of dinoflagellate and other algae blooms, including harmful algal bloom species (HABs), such as the toxic red tide organism *Karenia brevis*. Previous emergency discharges into Bishop Harbor have resulted in algal blooms and, as a result of the current discharges, an algal bloom (*Prorocentrum*) has been reported in Bishop Harbor.

3.1.1.2.1 toxicity to human life:

- By inhalation - none expected directly from untreated waste; there may be a risk from toxins produced by HABs.
- By ingestion - none expected directly from untreated waste; there may be a risk via food sources—see 'Food source' below.
- By skin absorption - none expected, however, the wastewater is acidic (pH 2.5) and may cause eye irritation and skin rashes after prolonged contact.

3.1.1.2.2 method of contact:

- Direct contact with material - major risk due to direct impact of the large volume of water that would be released during a catastrophic dike failure; risk is from drowning and direct physical impact and force of the water wave.
- Water supply - none expected.
- Food source - release of water may induce HABs resulting in an accumulation of algal toxins in recreational oyster beds. Ingestion of oysters may cause illness, and in some sensitive individuals, death.

3.1.1.2.3 the impact on health of present and future generations:

- Chronic toxicity - HAB toxins can be lethal to finfish, and toxins have been documented to cause adverse neurological and immunological effects in humans, including short-term memory loss, respiratory discomfort, skin rashes and neuro-cognitive effects.
- Carcinogenic, teratogenic and mutagenic properties of the material - none expected.
- Potential for causing long-term effects - unknown.

3.1.2 Evaluation of alternative methods of disposal

Over the last two years, the FDEP has been aggressively pursuing innovative alternatives for the treatment, disposal, and re-use of this waste. These efforts have proved only successful enough to remove 145 million gallons in calendar year 2002. As discussed above, up to 700 million gallons must be removed through the period ending on November 30, 2003, in order to alleviate the emergency situation. An analysis of alternatives has been conducted by the applicant. It has been determined that as much as 165.3 million gallons may be removed by the alternatives that can be utilized between February 1 and November 30, 2003. However, these alternatives are not guaranteed and some will not be available until later in the year. A summary of the alternatives is provided below. Each alternative is followed by an estimated capacity if found potentially feasible to a degree where consumption volumes can be estimated. Reliable options were used in calculating the 165.3 million gallons estimate discussed above. The applicant and US EPA are continuing to examine these and other potential options.

3.1.2.1.1 landfill and soil disposal:

According to the FDEP, bulk liquids are prohibited from being disposed of in Florida landfills. Therefore, in order to landfill this waste, it would require stabilization with cement followed by disposal in a class 1 landfill. Stabilization would require 10,750 cubic yards of cement per million gallons of waste. The availability of sufficient quantities of cement is questionable and would cost greater than \$900 million. FDEP has estimated that the stabilization material is likely to occupy more than 3,200 acre-feet and that this landfill space may not be readily available. EPA also asked FDEP to consider disposal of the stabilized material on or near the site. FDEP determined that on site disposal would threaten the integrity of the gypsum stack liners planned for closure of the facility. This threat occurs due to the weight of the stabilized material, and the fact that

the material has a tendency to crack over time. Settlement within the gypsum stacks is anticipated to be 2 to 3 feet per year. This, combined with the cracking of the material, would most certainly puncture the liners. The logistics of removing, stabilizing, and replacing the required quantity of material while installing liners for closure would be quite challenging, if not impossible. Additionally, disposal of stabilized material on adjacent land would only be sufficient to contain only 12.5% of the material. The cost to do this would be on the order of \$78 Million to \$113 Million, completely depleting the FDEP trust fund for closure of this facility. Therefore, this alternative is not considered feasible.

3.1.2.1.2 well injection:

The use of existing (and development of new) Class I and Class V wells was evaluated by FDEP and EPA. It was determined that there are constituents in both the treated and non-treated process water that exceed primary drinking water standards and, therefore, it cannot be injected into a Class V well. There is no water quality standard at the point of injection for a Class I well and there are several existing Class I municipal wells in the area. However, to inject the wastewater directly into a municipal well, the well would have to be modified to become an industrial well requiring a physical modification to the well, the associated engineering for the new well design and modification of the permit, all of which are a lengthy process. FDEP identified one existing industrial/hazardous waste injection well located within 60 miles of the facility. However, this well was rejected due to limited capacity (0.27 mgd), the lengthy permitting process, and incompatibility with the existing waste stream at the well. On site development of a Class I well was also considered by FDEP and EPA. In order to develop such a well, an exploratory well would have to be approved, drilled, and tested. Construction and permitting would then be required. FDEP has estimated the time required to develop a well to be from two to four years. Therefore, this alternative is not considered feasible due to time constraints.

3.1.2.1.3 incineration on land or at sea:

FDEP evaluated the incineration option in 2002. The cost of incineration was estimated at more than \$30 to \$40 per 1,000 gallons of waste or 11 to 30 million dollars for treatment of the waste. In addition, it is estimated that it would take 18 months to construct the needed systems. Therefore, this alternative is not considered feasible due to time constraints.

3.1.2.1.4 reclamation and recycling:

Land Application

Two land application alternatives were considered by FDEP. The first alternative involved applying the waste to land at, or adjacent to, the facility. FDEP determined that levels of sodium, sulfate, and total dissolved solids would exceed Florida's ground water quality standards and also adversely affect citrus and vegetable crops and a variety of sods even if it were treated utilizing the double-lime with aeration treatment process. In addition, land values would make this alternative very expensive.

April 2, 2003

The second land application alternative evaluated is the dilution of the treated process water and transfer to regional treatment facilities and using their land application infrastructure. This alternative has been and is being utilized, to its practical extent. However, this alternative is very wet-weather sensitive and therefore unreliable. It cannot be used during the rainy season (June through October) and is unreliable due to the prediction of higher than normal rainfall this year. The potential but unreliable consumption volume estimates for the land application alternatives (February 1 - November 30, 2003) are as follows:

1. Manatee County (3/15-6/15 & 10/15-11/30 @ 0.2 mgd): 21.4 MG (unreliable)

Therefore, this alternative is a potential feasible option for disposal of a portion of the waste.

Re-Use

FDEP has evaluated and utilized multiple re-use alternatives. Past utilization of this alternative has included re-use of the wastewater by CF Industries, Inc. (CF), a similar phosphate manufacturing complex. However, rainfall levels in 2002 have threatened CF's surge storage capacity and will prevent this option from being used again until 2005. Cargill Fertilizer also reused wastewater until the rain events of 2002 caused similar problems with its capacity. Cargill currently accepts about 375,000 gallons per week, but will not sustain this reuse once wet weather arrives. FDEP has determined that only half of the potential consumption capacity of the Cargill facility is a reliable feasible option. The Florida Power and Light (FPL) Company also operates a large electric generating plant that uses the process water. However, FPL limits the quality of the water to ammonia concentrations of less than 20 mg/l. This level previously was only achieved at treatment rates at the Piney Point facility of less than 0.5 mgd. However, improvements to the treatment process may allow meeting the ammonia concentration limit at higher treatment rates. The potential consumption volume estimates (February 1 - November 30, 2003) for the re-use alternatives are as follows:

1. Treat and Truck to Cargill: 4.9 MG (reliable)
2. Treat and Truck to Cargill: 4.9 MG (unreliable)
3. Treat and Truck to FPL: 10.5 MG (unreliable)

Therefore, these alternatives are potential feasible options for disposal of a portion of the waste.

3.1.2.1.5 biological, chemical or physical treatment:

Surface Water Discharges of Double-Lime Treated Waste

The wastewater at the facility is treated at a minimum using a lime precipitation, aeration, and sedimentation process. This process is designed to precipitate fluoride, phosphorus, metals and radionuclides. Discharges of this partially treated wastewater (double-lime with aeration) to surface waters in the vicinity have been evaluated by FDEP and EPA. These included discharges to Bishop Harbor and Tampa Bay.

Discharge to Bishop Harbor. The facility is currently discharging double-lime with aeration treated wastewater to Bishop Harbor under an Emergency Order. This order allows such discharges until May 31, 2003, but could be rescinded early if adverse impacts in the Harbor occur. With the onset of warmer water temperatures in March,

adverse impacts to Bishop Harbor, an aquatic preserve, and Tampa Bay are likely to grow more severe. Signs of impact are already occurring and are expected to become more pronounced. The primary risks and adverse impacts are associated with its nitrogen load and include increased phytoplankton concentrations that attenuate available light to recovering seagrass communities, stimulation of harmful (toxic) algae blooms and increased macroalgae production that can smother seagrasses. As a result of the current discharges, an algal bloom (*Prorocentrum*) has been reported in Bishop Harbor. Blooms of toxic algae in embayments can be an increased risk to human health due to the high potential for human exposure to contaminated water. In addition, increases in primary production of algae can result in anoxia (low dissolved oxygen) conditions that can threaten fish and invertebrates in the bay. Therefore, discharging wastewater in this manner into Bishop Harbor is not considered a feasible option due to the likelihood of significant adverse impacts.

Discharge to Tampa Bay. EPA also evaluated the alternative of constructing a pipeline for a direct discharge of double-lime with aeration treated wastewater to Tampa Bay. It was determined that this alternative would require nearly a year for construction and would require an NPDES permit. Because a Total Maximum Daily Load (TMDL) for total nitrogen has been developed for Tampa Bay, before any new discharge could be allowed, offsets would have to be obtained to ensure that overall nitrogen loadings are not increased. Finding sufficient offsets for the size of the Piney Point nutrient loadings would be problematic. Current TMDL allowable nitrogen loadings to Lower Tampa Bay are 349 tons/year. Assuming a nitrogen concentration of 50 mg/l, discharge of 535 million gallons of the treated wastewater would result in an additional 111 tons of nitrogen or an increase of 32 percent over existing loads. Point sources alone for Middle (78 tons/year) and Lower (1 ton/year) Tampa Bay combined only equate to 79 tons/year. Therefore, this alternative has been determined to be infeasible and in any event, not available until next year.

The potential consumption through discharges of partially treated wastewater to surface waters are:

1. Double-Lime with Aeration to Bishop Harbor (2/1-2/28): 44.9 MG (reliable)
2. Double-Lime with Aeration to Bishop Harbor (3/1-3/31): 60 MG (unreliable)

(Note: this option may need be halted because of impacts to Bishop's Harbor due to increased algal growth stimulated by the nitrogen, however any amounts discharged during March 2003 will be deducted from the amount authorized to be ocean disposed.

Surface Water Discharges after Further Treatment

Further treatment of the waste beyond the double-lime process could allow for surface water discharges to Bishop Harbor or other surface waters. Additional treatment alternatives identified by FDEP and EPA include:

Reverse Osmosis (RO). FDEP has been utilizing RO technology since July 2002 to treat a portion of the waste followed by disposal into Bishop Harbor. The RO technology produces a high quality water final product that can be discharged to surface waters. However, RO has not yet been demonstrated to be sustainable for use with this type of wastewater due to frequent fouling of the filters and membranes and the fact that the byproduct results in an increase in the mass of pollutants in the wastewater, gradually decreasing the effectiveness of the process. RO at this time and in the foreseeable future

April 2, 2003

is limited to 0.3 mgd. FDEP is attempting to increase RO capabilities by an additional 0.9 mgd but has been unable to secure a contractor to commit to such volumes. Therefore this treatment alternative is considered a feasible alternative for treatment and disposal of a portion of the waste.

Membrane Separation. FDEP has investigated utilizing a membrane ammonia separation process for treatment of the wastewater followed by discharge to surface waters. FDEP is negotiating with a contractor to supply a membrane ammonia separation process. However, this process is unproven, would require a 6-month minimum start-up time and would require confirmation that surface water discharges of the treated water would be permissible under the Clean Water Act. The earliest this alternative could be implemented would be July of 2003 at a rate of 0.2 to 2.0 mgd. FDEP has given it a Low likelihood of success. Therefore, this alternative is not considered feasible at this time due to time constraints and the unreliability of the technology.

Break-Point Chlorination. FDEP has investigated utilizing break-point chlorination as a means of eliminating the ammonia in the lime treated process water followed by discharge to surface waters. They are currently testing this technology, however; it would also require confirmation that surface water discharges of the treated water would be permissible under the Clean Water Act. The earliest this alternative could be implemented would be July of 2003 at a rate of 1.0 to 2.0 mgd. FDEP has given it a Medium likelihood of success based on the results of preliminary tests. Therefore, this alternative is not considered feasible at this time due to time constraints and the unreliability of the technology. However, if and when this technology comes on-line, any amounts treated and discharged will be deducted from the amount authorized for ocean disposal.

Transfer to Advanced Wastewater Treatment (AWT) Plants for Surface Discharge. FDEP has investigated this possible alternative and is currently in negotiations with the cities of Bradenton and Tampa, which operate AWT facilities that discharge to surface waters. These options are limited by the Piney Point facility's capacity to load trucks, the AWT's physical abilities to receive and unload trucks and the AWT's abilities to accept high sulfate wastewater without generating large volumes of nitrogen gas. Alternatives to trucking to the facilities were also examined by FDEP at the request of EPA, but found infeasible due to the distance involved and the time required to construct the necessary infrastructure.

Ion Exchange Using Clinoptilolite. Review of the application by EPA's Region 8 Office of Research & Development Hazardous Substances Technical Liaison resulted in a recommendation for evaluation of additional treatment by ion exchange to remove excess ammonia. FDEP has reviewed this recommendation and determined that, due to the presence of sodium concentration in the wastewater, the clinoptilolite will not perform as well as reported in the literature. Tests were actually conducted at Piney Point in the 1980's and the clinoptilolite was found to be far less effective than the aeration process currently being used. Additionally, in order to avoid scaling or biofouling of the ion exchange resin, the water must be filtered. The wastewater at Piney Point has been extremely difficult to filter and requires advanced filtration techniques that are currently being tested on site. The ion exchange would also result in a significant volume of ammonium sulfate solution waste that would have to be managed. As a result, the FDEP determined that this alternative is not feasible at this time.

April 2, 2003

The potential consumption volume estimates (February 1 - November 30, 2003) for these additional treatment alternatives with surface discharges are as follows:

1. RO discharges to Bishop Harbor: 82.5 MG (reliable)
2. Treat and Truck to Tampa: 33 MG (reliable)
3. Treat and Truck to Bradenton (5/1-11/30): 21.4 MG (unreliable)

Treat and ship to other wastewater treatment plants. FDEP and EPA evaluated the feasibility of barging the wastewater to large municipal AWT facilities in other States. One possible location was identified; however, the facility is not authorized to accept industrial waste and local ordinances would have to be changed. In addition, physical modifications would be required at the docking facilities (i.e., dredging) to accommodate the barges and to move the wastewater from the dock to the treatment facility. FDEP and EPA concluded that barging the wastewater to this facility is not immediately feasible.

Transporting the waste to out-of-state industrial waste treatment facilities for disposal was also explored. Two facilities were located as possible options, but FDEP and EPA do not consider the use of either to be immediately feasible because of the distances involved in transporting the wastewater, complex logistics, and high transportation costs. The State of Florida will continue to pursue options involving the treatment and shipment of the Piney Point wastewater to other wastewater treatment plants.

3.1.2.1.6 storage:

FDEP has investigated and implemented increasing the on site storage capability. They have increased storage at the site by 140 million gallons by raising the height of the existing dikes to a maximum of 50 to 70 feet. The existing dikes cannot be increased. At the request of EPA, FDEP evaluated the addition of storage beyond the footprint of the phosphogypsum stack system. They determined that they could create an additional 135 million gallons of storage in adjacent areas, utilizing a pond with a maximum footprint of 28 acres and a perimeter dike height of 28 feet. However, this would increase the watershed of the process water system thereby substantially increasing the amount of rainfall to be treated and disposed. Construction of a pond of this size would severely restrict routing of runoff from extreme storm events around the plant, and would aggravate flooding conditions. A smaller pond could be constructed encompassing 12 acres and yielding a storage capacity of 45 million gallons. However, this will result in a net gain of 5 to 9 million gallons of water per year, or about 20% of the increased capacity. Consultation with mining waste authorities at the EPA Environmental Response Team confirmed that increased storage for these types of facilities is not a feasible option.

3.1.2.1.7 partial treatment prior to ocean disposal

Before ocean disposal, this wastewater would be treated using a lime precipitation, aeration, and sedimentation process. This process is designed to precipitate fluoride, phosphorus, metals, and radionuclides. This treated wastewater will have a pH of 6.0 to 8.5, total dissolved solids of about 7,000 mg/L, turbidity less than 7 nephelometric turbidity units, NH₃-N of 10 to 150 mg/L, and a density of approximately 1,005 kg/cubic meter. Organic and inorganic contaminants are expected to be below

April 2, 2003

detection limits or within Federal Water Quality Criteria (WQC), with the exception of NH₃-N, which is expected to meet WQC within the allowable mixing zone.

Furthermore, disposal will be managed to achieve rapid dilution (greater than 200 to 1 within a minute) and dispersion over the disposal area.

3.1.2.3 *The disposal site designation and monitoring:*

US EPA is considering permitting the Florida Department of Environmental Protection to utilize barges that would gradually release the treated wastewater in the specified disposal site in the northeastern Gulf of Mexico. These barges would gradually release the treated wastewater in the specified disposal site in the northeastern Gulf of Mexico no closer than 40 nautical miles (74 kilometers) offshore. Release of the treated wastewater would only occur in water depths greater than 40 meters and east of the Florida and Alabama state line (87° 00.00' W longitude). This method would provide the most dispersion of the waste while avoiding critical habitats such as the Florida Middle Grounds and the Elbow. It also would ensure that disposal ceases at least 100 nautical miles east of the known eastern limits of the Hypoxic Zone. Releases would be spread out over 8 months.

3.1.2.3.1 *physical, chemical and biological information relating to the proposed dump site:*

Disposal shall be limited to water depths of at least 40 meters and all disposal must be completed prior to reaching a longitude of 87° 00.00' W. Disposal is also bounded to the north by 29° 11' N maintaining a 40 nautical mile minimum distance from shore and to the south by 27° 11' N and must occur within the Exclusive Economic Zone (EEZ). Bottom topography is highly variable throughout this site, with depths ranging from 40 meters to 3600 meters. Water quality is seasonal according to "Assessment of Currents and Hydrography of the Eastern Gulf of Mexico" (Ichiye, Kuo & Carnes, Texas A&M, 1973). Additional information regarding the water quality and ecology in this area can be found in the following resources: "Southwest Florida Shelf Benthic Communities Study Year 5 Annual Report" (Danek, et. al, 1986); "Deep Basin Oceanographic Conditions and General Circulation" (Molinari et. al, 1975); "Gulf of Mexico Physical Oceanography Program, Final Report: Year 5" (SAIC, 1989); "Southwest Florida Shelf Ecosystem Study" (US Minerals Management Service, 1985).

3.1.2.3.2 *proposed method of release of material at the site:*

Disposal from the vessels would be from single discharge openings located above or below the water line. Discharge openings would have a diameter of 12 to 20 inches and the rate would be between 2,200 and 4,000 gallons per minute. Vessel speed during disposal would be limited to greater than 4 knots.

3.1.2.3.3 *proposed times and dates of disposal:*

Disposal would be authorized upon issuance of the permit on a 24 hour/7 day basis until expiration of the permit on November 30, 2003, subject to the limitations and requirements specified in the permit.

3.1.2.3.4 *monitoring to assess the impact of the material on the marine environment:*

April 2, 2003

US EPA would require monitoring of a conservative tracer to determine the actual near and far-field dilution rates achieved. Analysis of the treated wastewater has demonstrated that it meets all marine water quality criteria, with the exception of nitrogen-bearing ammonia. The use of barges with proper dispersion pumping techniques and equipment would result in nearly instantaneous dilution of the ammonia to the point where it would meet marine water quality criteria beyond the immediate zone of release. The wastewater is free of pathogens, and, with the rapid dispersal of ammonia, no marine mortality is expected.

Following completion of and during disposal activities, EPA would evaluate the impact of disposal. The following types of effects, in addition to other necessary or appropriate considerations, would be considered in determining to what extent the marine environment has been impacted: 1) movement of materials into estuaries or marine sanctuaries, or onto oceanfront beaches, or shorelines; 2) movement of materials toward productive fishery or shellfishery areas; 3) absence from the disposal site of pollution-sensitive biota characteristic of the general area; 4) progressive, non-seasonal, changes in water quality or sediment composition at the disposal site, when these changes are attributable to materials disposed of at the site; 5) progressive, non-seasonal, changes in composition or numbers of pelagic, demersal, or benthic biota at or near the disposal site, when these changes can be attributed to materials disposed of at the site; and 6) accumulation of material constituents (including without limitation, human pathogens) in marine biota at or near the site.

In addition, EPA is planning to use its Ocean Survey Vessel, the Peter W. Anderson, to monitor water quality during disposal operations.

3.2 CONSULTATION WITH OTHER COUNTRIES WHICH MAY BE AFFECTED / 3.3 CONSULTATION WITH IMO

We do not anticipate any detrimental environmental effects from this disposal, nor do we believe any other countries will be affected by this disposal. Nevertheless, we acknowledge Mexico's shared concern over issues affecting the Gulf of Mexico and as a courtesy we will consult with Mexico regarding this situation.

3.2.1 Information to be provided to other countries which may be affected and IMO

All significant information used in making the determination, listed in section 3.1.1, should be provided and should include:

3.2.1.1 type including chemical composition of material:

The waste being authorized for disposal into ocean waters is treated process wastewater and rainfall-runoff from the former Piney Point Phosphates, Inc. phosphate fertilizer manufacturing complex. This treated wastewater will have a pH of 6.0 to 8.5, total dissolved solids of about 7,000 mg/L, turbidity less than 7 nephelometric turbidity units, NH₃-N of 10 to 150 mg/L, and a density of approximately 1,005 kg/cubic meter. Organic and inorganic contaminants are expected to be below detection limits or within

April 2, 2003

Federal Water Quality Criteria (WQC), with the exception of NH₃-N, which is expected to meet WQC within the allowable mixing zone.

3.2.1.2 amount of material to be dumped, location of disposal site and dates of disposal:

The permit would authorize no more than 2.1 million metric tons (535 million gallons) of treated wastewater to be disposed. This amount would be reduced by a quantity directly proportional to quantities consumed by alternative disposal options if and when they become available.

See section 3.1.2.3 for information on the location of the disposal site.

Disposal would be authorized upon issuance of the permit on a 24 hour/7 day basis until expiration of the permit on November 30, 2003, subject to the limitations and requirements specified in the permit.

3.2.1.3 risk to human health: See section 3.1.1.3 above.

3.2.1.4 adverse impact on the marine environment:

No adverse impact on the marine environment is expected from disposal of this treated wastewater. This treated wastewater is expected to meet all national marine water quality criteria, with the exception of ammonia nitrogen. Rapid dilution will ensure that ammonia levels are also within the applicable water quality criterion level. Results of initial toxicity testing show that this treated wastewater is not toxic and will not induce toxicity after being disposed. Therefore, no adverse water column effects are anticipated. The initial plume of disposed water is expected to remain within the upper 3 meters of the water surface, and there are no solids in the waste that will reach the ocean floor. Therefore no impacts to benthic communities are expected. The only potential impact that has been identified is the risk of triggering a harmful algal bloom, which could subsequently move into coastal waters. However, disposal at least 40 miles offshore would reduce this risk significantly.

3.2.1.5 alternatives considered: See section 3.1.2 above.

3.2.1.6 potential impact of action on other countries: We do not expect any other countries to be impacted by the disposal of this treated wastewater.

3.2.1.7 proposed actions to minimize potential adverse impacts:

Before ocean disposal, this wastewater would be treated using a lime precipitation, aeration, and sedimentation process. This process is designed to precipitate fluoride, phosphorus, metals, and radionuclides. This treated wastewater will have a pH of 6.0 to 8.5, total dissolved solids of about 7,000 mg/L, turbidity less than 7 nephelometric turbidity units, NH₃-N of 10 to 150 mg/L, and a density of approximately 1,005 kg/cubic meter. Organic and inorganic contaminants are expected to be below detection limits or within Federal Water Quality Criteria (WQC), with the exception of NH₃-N, which is expected to meet WQC within the allowable mixing zone. Furthermore, disposal will be managed to achieve rapid dilution (greater than 200 to 1 within a minute) and dispersion over the disposal area.

April 2, 2003

3.2.1.8 proposed monitoring program to determine impact: See section 3.1.2.3.4 above.